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PUBLIC HEALTH HAZARDS IN USE OF AGRICULTURAL CHEMICALS

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Pesticides are an economic necessity to agriculture. Many of the crops of our State could not be produced in their present quantity or quality without the use of agricultural chemicals. Large quantities of pesticides are also used in the protection of stored food, in disease control, and for home and garden use. Registration with the Bureau of Chemistry of the State Department of Agriculture increased from 5,507 products in 1943 to 10,843 in 1953.

Use of these new and more effective pesticides in greater quantities has created many more opportunities for exposure of human beings to their effects. Accidental poisonings and fatalities from this source are reported each year. Considering the widespread use of such materials, however, it is perhaps surprising that our statistics are not of greater magnitude. Research directed toward establishing effective pesticides which offer a lesser hazard to man is probably the most practical approach to the prevention of poisonings.

GREAT VARIETY OF PRODUCTS

Insecticides differ greatly in their chemical structure and properties and consequently differ in degree and type of toxicity produced. The rapid development of more and better pesticides has been the result of research stimulated by economic demand. Research directed toward replacement of the older, more hazardous pesticides, developed the chlorinated hydrocarbon group. These are widely used and include chlordane, benzine hexachloride (including its gamma isomer, lindane), aldrin, dieldrin, toxaphene and D.D.T. D.D.T. is, in fact, one of the most significant developments in insecticides, is presently in greater production than any single insecticide, and does not have a significant hazard of acute toxicity.

Chemical warfare research in Germany during World War II produced the first organic phosphate esters, of which parathion, T.E.P.P. and demeton (Systox) have been most widely used in California. Malathion and chlorthion have been recently introduced and is considered to be much less toxic in degree than other members of this group.

Although organic phosphate chemicals may enter the body by inhaling and swallowing, their ability to be absorbed rapidly through the skin is perhaps their most insidious property. It makes protection for users more difficult both from the standpoint of protective clothing and education. The concept of poisoning through spilling a substance on the skin is not easy to get across.

Some insecticides are not only extensively used in crop protection, but have become popular for home and garden use. Among these are D.D.T., chlordane, and lindane. Other types available contain nicotine, fluorides, and arsenic compounds, all of which are in general highly toxic. Like all other pesticides distributed in California, they must be registered and the label show the chemical or common name of the active ingredient, as well as appropriate warnings and precautions.

EXTENT OF USE

The extent of use of agricultural chemicals is indicated in Table III, which shows acreage treated by aircraft for selected insecticides. Total amounts of pesticides applied annually in California are not known. It is estimated that perhaps half of agricultural pest control operations are carried out by aircraft.

A good insecticide is one that gives the best performance for a given job at the lowest cost, but in its use the operator or innocent bystander may also be poisoned. Most poisonous chemicals effective against insects are also poisonous to man and other animals. The difference is that of degree and usage. It has been said, however, that "Any poison, however toxic, may be used with complete safety if proper precautions are taken."

Safe handling practice has been fully demonstrated in the manufacture of economic poisons. Active ingredients of many pesticide preparations are made by relatively few companies, usually large, well established chemical manufacturers with a background of experience in handling compounds of various degrees of toxicity. Plant design requires elaborate equipment as reactors, stills, condensors, filter presses, etc. Closed systems, built in controls, and a respect for the toxic hazard of the material, has reduced the incidence of morbidity and mortality to a negligible factor.

Toxic concentrates (basic ingredients) are purchased by the formulator from the manufacturers.

The concentrates are then mixed into varying percentages and package size for field use, or compounded according to requested concentrations. Many of these companies are small and employ few employees. In the early years when relatively less toxic materials were used, no serious difficulties developd. Since the development of chlorinated hydrocarbon insecticides and the organic phosphate ester group, new and serious dangers are present. Therefore potential dangers arise in the compounding stage unless adequate controls are installed and safe practices rigidly enforced.

Many types of crops are grown in California under a variety of conditions. It is necessary, therefore, to insure that the right preparation is used at the right time for control of seasonable pests. Formulators supplying materials to the applicator include on the label recommendations for use. Field distribution warehouses usually have advisory entomologists or other qualified personnel who recommend preparations, strength, and method of application.

Economic poisons are usually received by the applicator as dusts, wettable powders, or emulsifiable liquids. In almost all procedures except dusting, the first step in handling the concentrate is further dilution or preparation by the applicator.

APPLICATION

Application of insecticides is usually made in three ways: hand spray, mechanical spray, or by aircraft in the form of liquids or dusts. It is during these operations that the greatest personal or employee exposure occurs.

Workers engaged in the use of chemicals are not only subjected to the more usual causes of industrial accidents, but because of the inherent physical and chemical properties of many of these materials, are also exposed to the danger of systemic poisoning through introduction of these substances by inhalation, ingestion, or skin absorption into the body. Diluting, preparing, or loading these toxic materials brings the individual into close contact with the insecticide. Dusts and wettable powders of the selected type are used in concentrations as received from the distributor. Opening sacks and dumping the contents into the tank for dry dusting, slurry making (concentrated mixture of emulsion and wettable insecticide powder), or dilution, may expose the operator to dust clouds directly into his breathing zone.

In actual spray operations, the ideal spray is one in which the released material strikes and remains on the tree or crop. This operation produces primary or secondary airborne clouds of the sprayed material, consequently the sprayer may be covered with dust or wet from the spray. This exposure applies not only to hand and machine spraying operations, but also to crop dusting pilots, flying through a swath of released material.

Careless storage and disposal of used containers have contributed to serious accidents, particularly among children. Incidental exposures from sprays and dusts drifting to nearby crops, animal enclosures, residences, school playgrounds, etc., have been a lesser, but still a potential hazard.

CASES AND DEATHS

Table II tabulates "Agricultural Chemicals Causing Occupational Diseases." Of the total number of reports of occupational disease due to agricultural chemicals, the percent due to organic phosphate insecticides has risen from about 20 percent in 1950 to over 40 percent in 1953. Tabulation by occupation for 1953 indicates that sprayers accounted for the greatest number. We do not know, however, which group carries the greatest risk, as data on the number of persons employed in the various occupational categories who work with pesticides are not available.

Table I lists reported accidental deaths due to pesticides occurring in California during the period of 1951 to 1954. It is somewhat alarming to note that deaths among children were more than double those due to occupational exposure. The youngsters ranged in age from 16 months to 9 years, with an average of three years.

One of the incidents which resulted in the death of a child occurred when a two-year-old boy and his four-year-old sister found a half filled bottle of T.E.P.P. concentrate and used the liquid to make mud pies. When they arrived home for lunch the boy was soaking wet, his eyes were rolling and he was having difficulty in breathing. The mother rushed the children to her physician, where the boy died shortly after arrival. The girl began to show the same signs and symptoms and after emergency treatment for nonspecific poisoning, was transferred to a hospital. The label on the original bottle was stained and illegible. A new bottle was purchased and the label shown to the physician. A diagnosis of organic phosphorus poisoning was then made and atropine administered. The child recovered.

PREVENTION THROUGH EDUCATION

In California available statistics indicate there are two groups toward which special emphasis on prevention of accidental insecticide poisoning should be directed—parents, who have the main responsibility for the safety of their young children and employers who should assume responsibility for the safety of their employees as it relates to their work.

The circumstances in which reported cases of insecticide poisoning among children have occurred show that one or more of three conditions were present. First, the parent or adult responsible for the child was not aware that the insecticide in question was harmful. Second, the insecticide had not been placed in a locked cabinet out of the reach of the child, and third, used containers had been left where they were easily accessible.

The various education programs directed toward parents therefore should include these recommendations: Parents should read all of the label and be guided by the warnings appearing on containers of pesticides and other household or agricultural chemicals when they are purchased. Where young children are living or likely to visit, a place should be provided where pesticides, medicines, drugs, and the like, can be kept locked up. All used containers of pesticides should be destroyed immediately or placed where no child could find them (note: garbage cans are well within the reach of children).

Ant poisons, and to a lesser extent weed-killers, have been the arsenic preparations involved in the reported fatal poisonings among children (see Table I). These ant poisons must be left in and around the premises to accomplish their objective. They also may be sweetened. These two factors

possible contribute to their availability and attractiveness to young children. It has been recommended that less toxic chemicals be substituted for ant control where there are children, or that the container of an arsenic preparation be of a construction which allows for the poison to be available to ants but not to children.

PROTECTIVE EQUIPMENT

Employers are legally and morally responsible for the safety of their employees in their work. The safe handling of insecticides or any other potential occupational hazard begins with the awareness on the part of the employer of what dangers may be involved. Prevention of poisoning consists of three phases: Providing protective equipment necessary to keep exposure at a safe level, providing medical supervision, and educating the employees concerning hazards and what they must do to protect themselves.

Spraying operations both by hand and machine have similar basic exposures to ground crews, through direct or secondary spray leaks or breaks in the equipment. Hand spraying with multiple lines extending from a single tank requires extreme caution. Exposure to direct cross fire spray can be reduced when the applicators spray away from each other. Dusting or spraying downwind from the operation places the employee directly in the path of airborne contaminants.

Tower boom spray rig operators may also be directly exposed to fresh spray when tree growth restricts free rig passage between rows. Trees should be trimmed to allow clear passage. This would also provide more efficient coverage, especially in speed spraying. Reversing direction on alternate rows is recommended to allow settling time of airborne spray. Cleaning clogged nozzles or atomizers by hand exposes the employee to direct skin contact with the spray. Immediate hand-washing following this action is imperative. Drivers of rigs should also be protected by wearing a hat, long sleeve clothing and mask. A raincoat or poncho should be used if wetting from spray drift is a problem, or a removable canopy may be attached to minimize spray drift.

In application by aircraft, it is believed that the major exposure to the pilot occurs during loading insecticides in dry dust form. Loading should not be performed by the pilot. A practical method of preventing his exposure would be to provide swampers (helpers) to load insecticides into the aircraft hopper. During flight it is common practice to fly through the spray swath or windrift. This not only exposes the pilot to inhalation of dusts, but allows settling on his extremities and body, or allows the dust to be blown by wind velocity into openings of his clothing. For complete protection a filtered air supply respirator should be provided. Possible elimination of exposure to his extremities may be accomplished by introducing fresh air under positive pressure to the inside of the flying garments. When flagmen are used as guides to pilots, necessary protection from settling or airborne dust must be provided for them.

PRECAUTION FOR HANDLING

Bags of insecticides should not be torn open by hand, but cut open with a knife. Mixing, diluting, or preparation of slurry brings the material within the operator's breathing zone. Coveralls with sleeves down, impervious rubber gloves, hat, and approved masks should be worn at all times during this operation. Nurse rig operators in making recurrent trips to the standpipe or water source should avoid driving between newly sprayed rows.

Proper disposal of used containers is most important. Paper bags, sacks and cardboard drums should be burned at the end of each day, or following each operation, for the protection of children and animals. Avoid breathing the smoke. Noncombustible jars, metal cans and drums should be broken, punctured or flattened, then disposed of by burial.

Storage of packaged materials, or partially filled containers should be kept under lock and key at all times. Access to this material should be the responsibility of one individual.

All persons using insecticides should be thoroughly informed of their characteristics. Careful precautions and carefully worded directions for their use are usually incorporated on the labels by the manufacturer or the formulator. These precautionary instructions should be strictly followed.

Accidental exposures to passersby could be minimized by posting warning notices around the spray area, advising them to stay out, also against eating fruit from sprayed areas.

Where residences are located in or near the spray area, windows and doors should remain closed during spray operations and air conditioning units turned off. Children should be restrained from entering or playing in recently sprayed areas.

One of the most important safeguards lies in good personal hygiene. Protective clothing should never be worn longer than one day without washing. Provision for laundering should be provided at company or spray headquarters. Clean clothing should be provided to spray crews at the start of each work day. Responsibility for observation of this should be assumed by each unit foreman. When accidental spillage of wet material or exposure saturates any portion of the clothing, a shower and complete clothing change must be made immediately. Provision for this should be provided by the company, and a pick-up truck should be available at all times for such emergencies.

Provision for portable drinking water on the job can be made by installation of a separate tank on the rig. This should be sealed so that no cross connection can be made whereby dilution water, dilute spray, or contaminant can enter the tanks. The spigot should be covered to avoid contamination. No employee should be allowed to drink water from other than approved sources.

No employee should be allowed to carry lunches or food into the spray area. Smoking during spray operations should be discouraged. Careful washing of hands and face should be encouraged before eating or smoking.

When respiratory equipment is provided, it is important that the equipment is adequate and in good working order. Reasonable comfort, proper fitting face piece, servicing and sterilization are important factors in the effectiveness of the respirator. Neglect may render a good

respirator quite ineffective and produce a false sense of security.

It is recognized that hard physical work is involved in manual application of agricultural chemicals, and often during warm or hot weather. Emphasis cannot be too strongly stressed of the importance of complete skin coverage when handling highly toxic insecticides such as the toxic organic phosphate esters, readily absorbed into the system through the skin, even under such trying conditions.

A typical example of the need for extreme care and respect for these poisons can be illustrated by a case history in California reported last August. A truck driver used to transporting and handling organic phosphates, to carefully wear protective clothing, and to wash carefully after each exposure, spilled a couple of ounces of Systox (demeton) on his trousers one morning. Knowing that it could be rapidly absorbed through the skin, he washed the spot out with a rag and water. Apparently in a hurry, he continued to wear the same trousers. By late afternoon he was hospitalized in a critical condition, exhibiting signs of severe organic phosphate poisoning. Fortunately the employer had provided medical supervision, and the physician in charge was well acquainted with the nature of the chemical poisoning and its treatment. No time was lost in administering atropine and prescribing other measures which are lifesaving when promptly given.

MEDICAL SUPERVISION

Medical supervision is particularly valuable for workers exposed to organic phosphate chemicals. Blood cholinesterase activity levels can be determined periodically for persons exposed to these insecticides. When interpreted by the physician in charge of the program, these tests can serve as a check to determine if undue exposure is occurring. This procedure is not only useful in the prevention of illness, but can be a warning when precautions are not adequate. If accidental poisoning does occur, a physician who is well acquainted with the chemical involved can institute the necessary treatment.

It is a valuable safeguard for an employer to obtain the services of a nearby physician to protect the health of his workers. The physician will then be able to gain a firsthand knowledge of the particular chemicals with which the employees work. He can assist the employer in evaluating the dangers in the use of these substances, and he can examine the employees periodically and/or when indicated. The latter practice may detect early any reactions to chemicals which are occurring. Persons with a disease or conditions which make exposure to the particular

TABLE I

FATAL ACCIDENTAL PESTICIDE POISONINGS BY TYPE OF PESTICIDES

CALIFORNIA, 1951-1954

Year	PESTICIDE																	
	Total			Organic Phosphate Compounds									Arsenic			Other		
				Total			Parathion			TEPP								
	Children	Occupational	Other	Children	Occupational	Other	Children	Occupational	Other	Children	Occupational	Other	Children	Occupational	Other	Children	Occupational	Other
Total	13	6	3	5	4	1	2	3	0	3	1	1	6	0	1	1	2	1
1954	6	1	1	4	1	0	2	0	0	2	1	0	1	0	1	1	0	0
1953	4	4	0[a]	1	3	0	0	3	0	1	0	0	3	0	0	0	1	0
1952	3	1	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0
1951	0	0	2	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1

[a] Three deaths were reported but circumstances indicated the possibility that they were suicides.
SOURCE: State of California, Department of Agriculture, Bureau of Chemistry Annual Reports, 1951-1953. State of California, Department of Public Health, Bureau of Adult Health, Fatality Records.

TABLE II

AGRICULTURAL CHEMICALS CAUSING OCCUPATIONAL DISEASES[1] BY OCCUPATION AND TYPE OF CHEMICAL

CALIFORNIA, 1953

Occupation	Number				Percent			
	Total	Organic Phosphates	Other	Unknown[2]	Total	Organic Phosphates	Other	Unknown[2]
Total	377	156	47	174	100.0	100.0	100.0	100.0
Field workers, total	259	126	28	105	68.7	80.8	59.6	60.3
Pickers	27	14	3	10	10.4	11.1	10.7	9.5
Sprayers	124	79	13	32	47.9	62.7	46.4	30.5
Not stated	108	33	12	63	41.7	26.2	42.8	60.0
Nurserymen	8	1	1	6	2.1	.6	2.1	3.4
Food packers and canners	16	1	5	10	4.2	.6	10.6	5.7
Aircraft dusting personnel	12	3	4	5	3.2	1.9	8.5	2.9
Chemical factory workers	32	16	5	11	8.5	10.2	10.6	6.3
Truck drivers	11	3	1	7	2.9	1.9	2.1	4.0
Tractor operators	13	2	--	11	3.4	1.3	--	6.3
Service workers	12	3	3	6	3.2	1.9	6.4	3.4
Other and unspecified	14	1	--	13	3.7	.6	--	7.5

[1] Excludes diseases of employees not covered by the California Workmen's Compensation Act, such as maritime workers, railroad workers in interstate commerce, and workers employed by farmers who elect not to be covered.
[2] Includes unspecified chemical sprays, fertilizers, and weed killers.
SOURCE: State of California, Department of Industrial Relations, Doctor's First Report of Work Injury. Statistics compiled by the State Department of Public Health, Bureau of Adult Health.

chemicals more hazardous, can be discovered and transferred to another job.

There can be no doubt that pesticides have proved of great value, both in the control of insect-borne diseases of man, and in the protection of his crops. Health hazards, though serious, can be overcome by proper precaution and intelligent application.

TABLE III

REPORTED NUMBER OF ACRES TREATED BY AIRCRAFT FOR AGRICULTURAL PEST CONTROL FOR SELECTED INSECTICIDES

CALIFORNIA, 1950-1953 [1]

	Total	1950	1951	1952	1953
Total, all pesticides	11,817,238	1,916,874	[2]2,914,510	3,460,321	3,525,533
Organic phosphates, total	1,130,268	166,279	390,776	280,465	292,748
Parathion	271,068	31,775	99,980	61,896	77,417
TEPP	612,208	134,504	256,234	122,764	98,706
Systox	183,389	--	--	82,747	100,642
Malathion	17,624	--	--	1,757	15,867
EPN	45,946	--	34,562	11,301	83
OMPA	33	--	--	--	33
Aldrin	195,923	15	15,070	33,664	147,174
Dieldrin	175,213	10	1,108	4,396	169,699
Sulphur	3,708,139	661,121	1,283,761	1,037,412	2,725,845
DDT	4,773,537	883,706	1,416,597	1,289,593	1,183,641

[1] This table includes acres treated with mixed insecticides; and therefore, the breakdowns do not necessarily add up to the totals given. For example, a given number of acres treated with parathion-sulphur would appear both under parathion and sulphur.

[2] This total was later revised down to 2,892,559 acres, but is not corrected in this table. See State of California, Department of Agriculture, Bureau of Chemistry, Annual Report 1951, p. 272 note.

SOURCE: State of California, Department of Agriculture, Bureau of Chemistry Annual Reports, 1950-1953. Statistics compiled by the State Department of Public Health, Bureau of Adult Health.

Psittacosis Problem Draws Attention As Human Cases, Bird Infection Rise

The problem of psittacosis in California is receiving renewed attention as a result of, (1) an apparent increase in the infection rate of this disease among parakeets and other psittacine birds, (2) an increase in the number of these birds as household pets, and (3) a significant rise in reported human cases of psittacosis. Although no deaths attributable to psittacosis were recorded in 1954, there were 62 human cases reported in the State.

The pet bird industry itself has taken cognizance of this public health problem and has formed a committee representing almost every segment of the industry. This committee is sponsoring a bill now before the State Legislature which proposes a statewide control program aimed at decreasing the public health hazard from psittacine birds.

Of great significance to public health as well as the bird industry, certain studies now being carried out by the University of California indicate that a treatment method will soon be available by which birds infected with psittacosis can be treated and freed from the disease. If this experiment proves successful, it will provide a major tool for use in greatly reducing psittacosis infection in pet birds and thus reduce the hazard of human infection. Treatment of infected birds to free them from infection has much better chance of being applied as a control measure than the prior procedure in which all birds found to be infected were killed.

Control practices in California have gone through a cycle which began with rather stringent regulations in the 1930's, to a relaxation of control as the problem appeared of less importance in the 1940's, back to increasing concern since 1950 because of the rise in bird infection and in human cases.

Rather stringent psittacine bird control regulations were adopted in California during the 1930's because available information indicated that psittacine birds infected with psittacosis were the primary source of psittacosis infection in man. At that time the disease in man was considered to be very serious as the death rate of reported cases was over 20 percent. The annual reported human cases ran as high as 41. By 1949, the reported cases ranged from 3-21 annually and the death rate had dropped to less than 1 percent due to the use of effective antibiotics. Psittacine birds were incriminated as the source of infection for less than 50 percent of the human cases. The stringent regulations were not only difficult and expensive to enforce, but were imposing an economic hardship on the pet bird industry. As a result, all regulations except one requiring the keeping of sales reports, were dropped.

However, the situation has changed considerably since 1950. Last year over 90 percent of the 62 reported human cases were associated with psittacine birds. Data compiled by the University of California show that during 1953 and 1954, the amount of psittacosis infection in psittacine birds had increased sharply over that found in preceding years.

Also, since state regulations were rescinded and the federal interstate regulations were dropped in 1952, there has been a large increase in the psittacine bird population. Thousands of psittacine birds have been smuggled into California from Mexico. At the same time, there has been a large increase in the number of persons breeding and raising psittacine birds.

SPECIAL CENSUS RELEASES

Estimates of the Civilian Population by States, by Broad Age Groups, July 1, 1953. Series P-25 (106). Provisional Estimates of the Population of the U. S., January 1, 1950, to November 1, 1954. Series P-25 (107). Provisional Estimates of the Population of States, July 1, 1954. Series P-25 (108).

Copies of these releases may be obtained from: Library, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce at 419 Customs, 555 Battery Street, San Francisco, or at Room 450, 31 South Broadway, Los Angeles.

In ordering, specify series and number as shown in parentheses.

Health improvement, social progress and economic development—these are inseparable.—*WHO Newsletter,* Oct.-Nov., 1954.

Los Angeles May Face Court Action To Correct Sewer Inadequacies

Los Angeles City's lagging sewerage program, a perennial problem of rapid growth and one of critical public health significance, has prompted a new demand by the State Department of Public Health for action. Dr. Malcolm H. Merrill, State Director of Public Health and Executive Officer of the State Board of Public Health, has requested Mayor Norris Poulson to appear before a March 4th meeting of the board to discuss the problem, and by April 29th to be prepared to present the city's program for "correcting existing and potential public health hazards due to raw sewage discharges from the presently overloaded sewerage system."

In a letter of February 4, 1955, Dr. Merrill informed Mayor Poulson that "if a satisfactory program is not offered by the City of Los Angeles at that time, the State Board of Public Health will have to use its full power and authority, including legal action, if necessary, to protect the public health."

The letter to Mayor Poulson follows:

On July 20, 1954, I wrote you calling your attention to our repeated warnings to the City of Los Angeles concerning the failure of the city to provide adequate sewage facilities to protect the public health of its citizens and those of neighboring communities, commented on our desire to assist in obtaining needed improvements without the necessity of quarantine action as was necessary at Santa Monica Bay Beaches, or a peremptory order as at Aviation Drive last year, and concluded with the following paragraph:

> **"The continued growth of the City of Los Angeles in population and industry without concurrent provision of appropriate sewers and sewage works creates a disturbing situation that is a source of considerable uneasiness to us as it must also be to the community."**

In your reply of July 28, 1954, you outlined the program of the city and the study then under way by your Citizens' Committee and expressed your hope and expectation that new facilities could be provided in time to avoid discharge of raw or inadequately treated sewage to natural water courses or the ocean.

The efforts of the city officials have not been sufficient to offset the effects of the ever increasing sewage flows. Following rain storms on December 9, 1954, and again on January 18, 1955, raw sewage was discharged to the Los Angeles River at Aviation Drive and on January 18, 1955, raw sewage was also discharged to Ballona Creek at Jackson Avenue. In addition, small discharges of sewage from the Union Pacific Pumping Station are occurring daily at peak dry weather flows and reaching the Los Angeles River via a storm drain near Downey Road. This tangible evidence of overflowing of raw sewage to streams is symptomatic of the overloaded condition of sewers in the entire system and points up potential public health hazards which may result in diarrhea, typhoid, amoebic and bacillary dysenteries and other communicable diseases. The major overflows of sewage occur in heavily populated areas easily accessible to the public and particularly to children who play in the stream beds.

A review of the capacity of major sewers and present flows in them, as reported by the staff of your Board of Public Works, shows overloading throughout the system. Furthermore, the increases in sewage flows have developed at a higher rate than was expected last year, as evidenced by the experience at the new Griffith Park Settling Basin where overflows to the Los Angeles River now occur daily except Sundays, even during dry weather periods.

The rapid expansion of subdivisions in unsewered sections of the city, particularly in the San Fernando Valley, has resulted in a total of at least 78,000 individual sewage disposal units. It has been estimated by the City Health Department that 20,000,000 gallons of water from these systems is filtered into the underground water strata each day. A serious public health hazard exists whenever sewage reaches streets and natural water courses as a result of failure of these individual systems. Such failures now occur frequently in areas having high ground water levels. These areas will be greatly increased following extended periods of heavy rainfall. New sewers are the only solution to this problem and, yet, if constructed now without concurrent construction of outfalls, they would cause still heavier overloads on the presently overloaded trunk sewers throughout the city.

I am convinced that the whole sewerage situation in Los Angeles is of such urgency that I must present the facts to the State Board of Public Health at its next public meeting on March 4, 1955, and have arranged to change the place of meeting from San Francisco to Los Angeles for that purpose. As head of the city government with primary responsibility for correcting these existing dangerous conditions in Los Angeles, you are hereby invited to appear at the meeting with appropriate staff to discuss this problem with our board.

Subsequently, at the April 29, 1955, meeting of the board, I am requesting you to appear and be prepared to present the program of the City of Los Angeles for correcting existing and potential public health hazards due to raw sewage discharges from the presently overloaded sewerage system and failure of individual systems in residential areas not now served by city sewers. This presentation should include the engineering design, financing program, and proposed dates of completion of construction of all necessary units. If a satisfactory program is not offered by the City of Los Angeles at that time, the State Board of Public Health will have to use its full power and authority, including legal action, if necessary, to protect the public health.

Very sincerely yours,
(signed)
MALCOLM H. MERRILL, M.D.
Director of Public Health

Production of "1080" Discontinued

The chemical company which produces the rodenticide sodium fluoroacetate known as "1080," has announced it has discontinued production because of its extreme toxicity and hazard to other animals and to humans. Newer and safer rodenticides now available are giving satisfactory results.

However, the company has stockpiled a supply of "1080" to meet normal requirements of established customers for several months while a changeover is taking place to other rodenticides.

Tuolumne Survey Report Made to Supervisors on Public Health Problems, Services and Resources

The State Department of Public Health in January submitted a final report and recommendations of its survey team on health needs of Tuolumne County to the Tuolumne County Board of Supervisors. A survey of health problems, services and resources was conducted by the department at the request of the Tuolumne County Board of Supervisors and the City Council of Sonora.

The Tuolumne survey was the third special survey to be conducted in rural California counties that are without organized public health services. Previously, surveys had been conducted in Trinity and Glenn Counties.

These surveys to determine public health needs in rural counties have been conducted by the department as the result of expressed interest of the various supervisors' associations and upon the specific request of the boards of supervisors concerned. The studies have materially increased departmental knowledge of the present day problems in these counties and have been helpful to the local boards.

In each of these surveys information was obtained by:

1. Compilation of available information from existing records in the State Department of Public Health, other state agencies, and local agencies.
2. Observation of conditions within the county.
3. Planned interviews, both individually and in groups, with local residents to gather both information and opinions.

The reports of these surveys outline the following major problems:

1. In Trinity County the outstanding problems were sanitation, nutrition, housing and the availability of all types of medical, nursing and dental services.
2. In Glenn County the outstanding problem was the mosquito. In addition, localized problems in sanitation, dental disease, a potential of rabies, a concern regarding emotional disorders, medical care for specific groups, and the lack of organization of the existing public health services were significant findings.
3. In Tuolumne County sanitation was the most obvious need.

In putting all of this information together three general conclusions seem apparent:

1. There is sufficient variety under present legislation as to methods whereby small counties can secure local public health services.
2. The present formula for the allocation of State Public Health Assistance Act Funds may not be sufficiently weighted to favor the small counties. Although the small counties receive a greater per capita share of these moneys, the total amount available to a county in any given year is often not sufficient to be of any real assistance. Many of these counties include large areas of national forest in their boundaries which places definite limitations on their taxing abilities for such services as public health.
3. The present standards governing the use of State Public Health Assistance Act Funds are not sufficiently flexible if they are applied to these counties in the early stages of initiating public health services. The findings in the surveys of the three counties show rather wide variations in the particular problems in each county. One can only assume that similar variation and individuality in problems and needs would be demonstrated if such surveys were done in the other counties presently without organized health services.

The major need in common in the above three counties appears to be improved sanitation. If one of these counties desired to start a program in sanitation, the present standards would not allow the State Health Department to assist financially unless programs or services were also initiated in the fields of vital statistics, health education, communicable disease control, maternal and child health, and public health laboratory services. In many instances these programs, all of which are desirable, should be developed gradually in response to a recognized need for them in the specific area.

Alpine County Contracts With Department for Public Health Services

Alpine County, with a population of 300, has entered into a contract with the State Department or Public Health, as of January 1st, for public health services under provisions of Section 1157 of the Health and Safety Code. This is the second rural California county that has contracted with the department for its public health services since the enactment of enabling legislation by the 1953 Legislature. Mono County, population 1,800, contracted for services last year.

With the addition of Alpine County, only 12 rural counties now remain without organized public health services. Two of the remaining 12—Trinity, population 6,300, and Sierra, population 2,900, are presently considering a contractual arrangement with the State.

As in Mono County, the State Department of Public Health will provide nursing and sanitation services to Alpine County. The county is to furnish the clerical staff.

Extension of organized public health services into California's sparsely populated rural counties is significant because those counties contain some of the most popular scenic and recreational areas of the State, into which large numbers of visitors flock for both summer and winter sports. Sanitation of recreational areas of the State is considered one of California's leading public health problems.

Unless a county arranges for organized public health services, that meet definite standards, either by establishing its own department or by contractual agreement with the State Department of Public Health, it is not eligible to receive state public health assistance funds.

Now that Alpine and Mono Counties have entered into contracts with the department, public health assistance funds can be used in providing their public health services.

Department Makes Effort to Recruit Physicians Upon Separation From Armed Services

To encourage recruitment of physicians into state and local health department positions, the State Department of Public Health has made arrangements with separation centers of the Army, Air Force and Navy in the San Francisco Bay area to provide the department on a current basis with the names of physicians leaving the armed services. Each individual physician is then contacted by the department and told of opportunities in public health.

A statement of "Opportunities in Public Health" has also been distributed to each physician now with the state and local health departments so that they may assist in the recruitment effort.

As of February 1st there were approximately 28 vacancies in public health medical positions in California. A study of "turnover" in medical positions for the state and local health departments during the year ending September 30, 1954, revealed that there were 51 replacements of physicians among the 226 medical positions.

In the total of 2,442 positions in 11 professional fields, there were 486 replacements during the year, and 179 vacancies on the day a count was made toward the end of the survey year.

Review of Reported Communicable Diseases Morbidity by Month of Report—January, 1955

Diseases With Incidence Exceeding the Five-year Median

Diseases	*Jan. 1955*	*Jan. 1954*	*Jan. 1953*	*Five-year median*
Amebiasis	45	25	41	42
Chickenpox	4,460	4,147	3,291	4,147
Encephalitis (etiology undetermined)	12	5	7	5
Food poisoning	36	17	1	13
Hepatitis, infectious	158	188	115	38
Measles	2,128	2,852	1,968	1,968
Meningitis meningococcic	43	38	61	38
Pertussis	479	160	251	256
Salmonella infections	51	60	45	45
Shigella infections	109	60	40	60

Diseases Below the Five-year Median

Diseases	*Jan. 1955*	*Jan. 1954*	*Jan. 1953*	*Five-year median*
Brucellosis	3	5	10	8
Coccidioidomycosis (disseminated)	1	6	9	6
Diphtheria	8	5	3	21
German measles	476	482	569	482
Influenza	12	53	1,160	88
Mumps	2,525	2,848	3,142	3,142
Poliomyelitis (total)	89	157	269	157
Poliomyelitis, paralytic	44	86	179	86
Rabies, animal	1	7	1	7
Streptococcal infections, Resp. incl. Scarlet Fever	836	941	723	941
Typhoid Fever	4	5	6	6

Venereal Diseases

Diseases	*Jan. 1955*	*Jan. 1954*	*Jan. 1953*	*Five-year median*
Syphilis	538	483	516	741
Gonococcal infections	1,128	1,335	1,438	1,535
Chancroid	10	14	28	[1]
Granuloma inguinale	1	---	2	[1]
Lymphogranuloma venereum	---	4	5	[1]

[1] Median not calculated.

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